

Dr. Geralyn (Sam) Zeller, Ph.D.

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Education

- Ph.D. Physics, Northwestern University, 2002, thesis: “A Precise Measurement of the Weak Mixing Angle in Neutrino–Nucleon Scattering”, advisor: Prof. H.M. Schellman
- B.A. Physics, with honors, Phi Beta Kappa, Northwestern University, 1994

Academic Positions

- 2009-present: Scientist, Fermi National Accelerator Laboratory
- 2007-2009: Director’s funded Research Associate, Los Alamos National Laboratory
- 2002-2007: Postdoctoral Research Associate, Columbia University
- 1994-2002: Graduate Research Assistant, Northwestern University

Awards and Honors

- DOE Office of Science Early Career Award, 2012
(postdocs: Roberto Acciarri and Anne Schukraft)
- Sambamurti Memorial prize, Brookhaven National Laboratory, 2010
- U.S. National Academy of Sciences Kavli fellow, 2009
- Mitsuyoshi Tanaka Dissertation Award in Experimental Particle Physics, 2003
- Pew Fellowship, Northwestern University, 1994
- valedictorian, Glenbrook South High School, 1990

Collaboration Membership (past and present)

- MicroBooNE, DUNE, ArgoNeuT, MiniBooNE, SciBooNE, NuTeV

Leadership Positions

- 2012-present: MicroBooNE co-spokesperson, elected
- 2011-2013: LBNE Executive Committee, elected
- 2012-2013: Snowmass Neutrino Working Group co-convener
- 2010-2014: LBNE Long-Baseline Physics Working Group co-convener
- 2010-2012: Level-3 manager for LBNE near detector group
- 2007-2012: MiniBooNE analysis co-coordinator
- 2009-2010: Liquid Argon reconstruction Software (LArSoft) group co-convener
- 2002-2007: MiniBooNE neutrino cross section group convener

Professional Activities and Committees

- 2015: Fermilab Science Advisory Committee, 2 year term
- 2015: APS Committee on Membership, 3 year term
- 2014: Neutrino 2014 International Advisory Committee
- 2014: Midwest Conference Undergraduate Women in Physics Organizing Committee
- 2014: NuInt14 Scientific Program Committee
- 2031: Co-Organizer of INT Workshop on Neutrino Interactions
- 2013: ICFA Neutrino Panel, 3 year term
- 2013: Fermilab Deputy Director Search Committee
- 2012: Fermilab Lederman Fellowship Selection Committee, 3 year term
- 2012: Fermilab Intensity Frontier Department Postdoc Overseer
- 2012: LBNE Reconfiguration Committee - Physics Working Group
- 2012: Fermilab Short-Baseline Focus Group - Cross Section Group Facilitator
- 2012: NuInt12, NNN 2012, and CIPANP 2012 - Organizing Committees
- 2011: Intensity Frontier Neutrino Working Group Co-Convener
- 2011: Project-X Fermilab-India Collaboration Coordination Committee
- 2011: DPF11 - Neutrino Physics Co-Convener
- 2011: NuInt11 - Scientific Program Committee

- 2010: Fermilab Employee Advisory Group, 3 year term
- 2009: International Neutrino Summer School (INSS) - Organizing Committee
- 2009: NuInt09, NuFact09 - Scientific Program Committee
- 2007: NuInt07 - Scientific Program Committee
- 2006: NuFact06 - Session Convener
- 2005: NuInt05, NuFact05 - Scientific Program Committee
- 2004: NuInt04 - Scientific Program Committee
- 2001: Young Physicists Forum (YPF), Snowmass 2001
- 2000: Young Particle Physicists (YPP) Co-Founder, 2000
- 1996: Fermilab Graduate Student Association (GSA), elected

Presentations (2007–2015)

- University of Chicago **colloquium**, *Opening A New Chapter in Neutrino Physics*, March 5, 2015
- Old Dominion University **colloquium**, *Next Steps in in Neutrino Physics*, March 3, 2015
- School of the Art Institute lecture, *Particle Physics*, February 24, 2015
- Fermilab Institutional Review presentation, *Coherence of Current Neutrino Research and Operations*, February 11, 2015
- Hadron Collider Physics Summer School lecture, *Neutrinos*, August 22, 2014
- LBNL **invited talk**, *Time Projection Chambers in Neutrino Physics*, May 2, 2014
- Fermilab Intensity Frontier seminar, *Neutrino-Nucleus Interactions*, February 13, 2014
- Case Western Reserve University **colloquium**, *Next Steps in Neutrino Physics*, January 23, 2014
- INT workshop, *Neutrino Quasi-Elastic Scattering Review*, Seattle, December 3, 2013
- Wheaton College seminar, *Mysterious Neutrinos*, November 19, 2013
- SLAC Summer Institute lectures, *Neutrino Sources and Detectors*, July 15, 2013
- Lepton-Photon **plenary**, *Long-Baseline Neutrino Measurements*, San Francisco, June 27, 2013

- DOE Laboratory Research Review, *The Fermilab Short-Baseline Neutrino Program*, Maryland, May 21, 2013
- APS **plenary**, *Recent Results and Future Opportunities in Neutrino Physics*, Denver, April 16, 2013
- AAAS Annual Meeting symposium, *Neutrinos: Nature's Mysterious Messengers*, Boston, February 15, 2013
- Midwest Conference for Undergraduate Women in Physics, *From Ballet to Particle Physics: My Path in Science*, University of Illinois, January 20, 2013
- University of Pittsburgh workshop, *Status of Neutrino Cross Sections*, December 6, 2012
- Brown University **colloquium**, *Tour of Neutrino Physics: This Decade and Beyond*, November 5, 2012
- ν STORM workshop, *Synergies Between ν STORM and Long-Baseline Neutrinos*, Fermilab, September 21, 2012
- ECT workshop on Hadrons in the Nuclear Medium, **plenary**, *Neutrino-Nucleus Measurements*, Trento, Italy, May 15, 2012
- University of Pennsylvania seminar, *Unanswered Questions in Neutrino Scattering*, April 17, 2012
- CSWP/DPF Luncheon for Women in Physics, *Lessons for my Twenty Year Old Self*, **keynote speaker**, Atlanta, April 2, 2012
- Colorado State University **colloquium**, *New Revelations on Neutrino Interactions*, October 3, 2011
- PANIC 2011, *Neutrino Cross Sections*, **plenary**, MIT, July 26, 2011
- Fermilab Institutional Review, *Neutrino Operations*, June 6, 2011
- Short-Baseline workshop, *Neutrino Interactions*, Fermilab, May 13, 2011
- APS 2011, *Neutrino-Nucleus Cross Sections*, **invited talk**, Anaheim, CA, May 2, 2011
- Stony Brook **colloquium**, *New Revelations on Neutrino Interactions*, April 26, 2011
- NuInt11 Workshop, *Highlights from NuInt11*, **conference summary**, Dehradun, India, March 11, 2011
- TRIUMF **colloquium**, *New Revelations on Neutrino Scattering*, January 20, 2011
- University of Michigan seminar, *New Revelations on Neutrino-Nucleus Scattering in the GeV Region*, December 6, 2010

- Aditya Sambamurti Memorial award lecture, *Expect the Unexpected: Neutrino Physics at MiniBooNE*, Brookhaven National Laboratory, July 20, 2010
- FRA Visiting Committee Meeting, *Current and Near Term Neutrino Program*, Fermilab, March 18, 2010
- CERN International Design Study meeting, *Neutrino Cross Sections*, March 17, 2010
- Neutrinos and Dark Matter conference (NDM09), *The Long Baseline Neutrino Experiment: LBNE*, **plenary**, Madison, Wisconsin, September 4, 2009
- Argonne National Laboratory seminar, *Recent Neutrino Scattering Results from MiniBooNE*, July 29, 2009
- International Neutrino Summer School (INSS), *Neutrino Interaction Cross Sections from MeV to TeV*, Fermilab, July 8, 2009
- Brookhaven National Laboratory seminar, *Recent Neutrino Scattering Results from MiniBooNE*, June 18, 2009
- Fermilab Users' Meeting, *Recent Results from both the MiniBooNE and SciBooNE Experiments*, Batavia, IL, June 3, 2009
- Los Alamos National Laboratory seminar, *Neutrino Cross Sections at 1 GeV*, December 10, 2008
- Kansas State University **colloquium**, *Neutrinos Don't Just Oscillate*, Nov. 17, 2008
- Elba-X workshop, *Neutrino Cross Sections at MiniBooNE*, **plenary**, Marciana Marina, Elba, Italy, June 26, 2008
- Neutrino 2008, *Low Energy Neutrino Cross Sections (K2K, MiniBooNE, SciBooNE, and MINERvA)*, **plenary**, Christchurch, New Zealand, May 28, 2008
- Columbia University **colloquium**, *MiniBooNE Neutrino Physics*, October 29, 2007
- MIT **colloquium**, *The MiniBooNE Experiment: Not Just for Neutrino Oscillations Anymore*, October 1, 2007
- Fermilab Joint Experimental Theoretical Physics seminar (Fermilab Wine & Cheese), *Neutrino Cross Section Physics: Past, Present, and Future*, June 1, 2007

Select Publications

- G.T. Garvey, D.A. Harris, H.A. Tanaka, R. Tayloe, G.P. Zeller, *Recent Advances and Open Questions in Neutrino-Induced Quasi-Elastic Scattering and Single Photon Production*, arXiv:1412.4294 [hep-ex], accepted by Phys. Rep.
- J.L. Hewett *et al.*, *Planning the Future of U.S. Particle Physics (Snowmass 2013)*, arXiv:1401.6077 [hep-ex].

- R. Acciarri *et al.*, *Liquid Argon Dielectric Breakdown Studies with the MicroBooNE Purification System*, JINST 9, P11001 (2014).
- J. Cao *et al.*, *Intial Report from the ICFA Neutrino Panel*, arXiv:1405.7052 [physics.acc-ph].
- J. Grange, C. Juszczak, J. Sobczyk, G.P. Zeller, *Discrimination of Parametrizations for Nuclear Effects in Neutrino Scattering Through Comparisons of Low and Medium Energy Cross Section Data*, Phys. Rev. D89, 073018 (2014).
- M. Bass *et al.*, *Baseline Optimization for the Measurement of CP Violation and Mass Hierarchy in a Long-Baseline Neutrino Experiment*, Phys. Rev. D91, 052015 (2015).
- A. de Gouvea, K. Pitts, K. Scholberg, G.P. Zeller, *Neutrinos*, arXiv:1310.4340 [hep-ex].
- A.A. Aguilar-Arevalo *et al.*, *Measurement of Antineutrino Neutral Current Elastic Differential Cross Sections*, Phys Rev. D91, 012004 (2015).
- A.A. Aguilar-Arevalo *et al.*, *First Measurement of the Muon Antineutrino Charged Current Quasi-Elastic Double Differential Cross Section*, Phys Rev. D88, 032001 (2013).
- C. Adams *et al.*, *Scientific Opportunities with the Long-Baseline Neutrino Experiment*, arXiv:1307.7335 [hep-ex].
- G.P. Zeller, *Neutrino Cross Section Measurements*, a new review in the 2012 edition of the Review of Particle Physics, J. Beringer *et al.*, Phys. Rev. D86, 010001 (2012).
- J.A. Formaggio and G.P. Zeller, *From eV to EeV: Neutrino Cross Sections Across Energy Scales*, Rev. Mod. Phys. 84, 1307 (2012).
- H. Gallagher, G. Garvey, and G.P. Zeller, *Neutrino-Nucleus Interactions*, Annual Review of Nuclear and Particle Science 61, 355 (2011).
- C. Anderson *et al.*, *First Measurements of Inclusive Muon Neutrino Charged Current Differential Cross Sections on Argon*, Phys. Rev. Lett. 108, 161802 (2012).
- J.L. Hewett *et al.*, *Fundamental Physics at the Intensity Frontier*, arXiv:1205.2671 [hep-ex].
- T. Akiri *et al.*, *The 2010 Interim Report of the Long-Baseline Neutrino Experiment (LBNE) Collaboration Physics Working Groups*, arXiv:1110.6249 [hep-ex].
- A.A. Aguilar-Arevalo *et al.*, *Measurement of the Neutrino Component of an Antineutrino Beam Observed by a Non-Magnetized Detector*, Phys. Rev. D84, 072005 (2011).
- A.A. Aguilar-Arevalo *et al.*, *Measurement of Muon Neutrino Induced Charged Current π^0 Production Cross Sections on Mineral Oil at $E_\nu = 0.5 - 2.0$ GeV*, Phys. Rev. D83, 052009 (2011).
- A.A. Aguilar-Arevalo *et al.*, *Measurement of Neutrino-Induced Charged Current π^+ Production Cross Sections on Mineral Oil*, Phys. Rev. D83, 052007 (2011).

- A.A. Aguilar-Arevalo *et al.*, *Measurement of the ν_μ Neutral Current Elastic Differential Cross Section on Mineral Oil at $E_\nu \sim 1$ GeV*, Phys. Rev. D82, 092005 (2010), **top cite 100+**.
- A.A. Aguilar-Arevalo *et al.*, *First Measurement of the Muon Neutrino Charged Current Quasi-Elastic Double Differential Cross Section*, Phys. Rev. D81, 092005 (2010), **top cite 250+**.
- A.A. Aguilar-Arevalo *et al.*, *Measurement of ν_μ and $\bar{\nu}_\mu$ Induced Neutral Current Single π^0 Production Cross Sections on Mineral Oil*, Phys. Rev. D81, 013005 (2010).
- A.A. Aguilar-Arevalo *et al.*, *Measurement of the ν_μ Charged Current Charged Pion to Quasi-Elastic Cross Section Ratio on Mineral Oil in a 0.8 GeV Neutrino Beam*, Phys. Rev. Lett. 103, 081801 (2009).
- A.A. Aguilar-Arevalo *et al.*, *Unexplained Excess of Electron-Like Events from a 1 GeV Neutrino Beam*, Phys. Rev. Lett. 102, 101802 (2009), **top cite 250+**.
- A.A. Aguilar-Arevalo *et al.*, *First Observation of Coherent π^0 Production in Neutrino-Nucleus Interactions with $E_\nu < 2$ GeV*, Phys. Lett. B664, 41 (2008), **top cite 100+**.
- I. Schienbien *et al.*, *A Review of Target Mass Corrections*, J. Phys. G: Nucl. Part. Phys. 35, 053101 (2008).
- A.A. Aguilar-Arevalo *et al.*, *Measurement of Muon Neutrino Quasi Elastic Scattering on Carbon*, Phys. Lett. 100, 032301 (2008), **top cite 100+**.
- A.A. Aguilar-Arevalo *et al.*, *A Search for Electron Neutrino Appearance at the $\Delta m^2 \sim 1$ eV² Scale*, Phys. Rev. Lett. 98, 231801 (2007), **top cite 500+**.
- J.S. Ma, J.M. Conrad, M. Sorel, and G.P. Zeller, *Can a 3+2 Oscillation Model Explain the NuTeV Electroweak Results?*, Phys. Rev. D73, 057302 (2006).
- G.P. Zeller *et al.*, *On the Effect of Asymmetric Strange Seas and Isospin Violating Parton Distribution Functions on $\sin^2 \theta_W$ Measured in the NuTeV Experiment*, Phys. Rev. D65, 111103, (2002), **top cite 100+**.
- G.P. Zeller *et al.*, *Precise Determination of Electroweak Parameters in Neutrino-Nucleon Scattering*, Phys. Rev. Lett. 88, 091802 (2002), thesis results, **top cite 500+**.